

**REMARKS**

**STATEMENT OF SUBSTANCE OF INTERVIEW**

Please review and enter the following remarks summarizing the interview conducted on February 10, 2005:

During the interview, the following was discussed:

1. Brief description of exhibits or demonstration: None
2. Identification of claims discussed: claims 1, 3-5 and 62
3. Identification of art discussed: Karella, Perez-Mendez, Takahashi
4. Identification of principal proposed amendments: None
5. Brief Identification of principal arguments: Lack of motivation to combine references due to avalanche amplification effects.
6. Indication of other pertinent matters discussed: Teaching away of the combination of references.
7. Results of Interview: No agreement was reached.

It is respectfully submitted that the instant STATEMENT OF SUBSTANCE OF INTERVIEW complies with the requirements of 37 C.F.R. §§1.2 and 1.133 and MPEP §713.04.

This Amendment, filed in reply to the Office Action dated April 6, 2005, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-8, 59, 62 and 64-69 remain pending in the application and remain rejected under 35 U.S.C. § 103 over the combination of Karella in view of Perez-Mendez and Takahashi. The Examiner maintains the same rationale for the rejections as set forth in the

previous Office Action and offers rebuttal to some of the arguments previously made of record.

Applicant submits the following arguments in traversal of the rejections.

None of Claims 1, 5 and 62, as amended, would have been obvious for those skilled in the art because the pixelated readout amorphous selenium plate of Perez-Mendez is completely different from the solid-state detector of the present invention. The amorphous selenium plate of Perez-Mendez is a diode array. In the diode array of Perez-Mendez, elements are formed so that they are completely separated from each other. In contrast, the photoconductive material layer in the solid-state detector of the present invention is a single layer, and the photoconductive material layer is not divided into elements. Specifically, in the present invention, the photoconductive material layer is placed between electrodes disposed “in a first direction” and electrodes disposed “in a second direction perpendicular to the first direction”, and a picture element is formed thereon by applying an electric field from the electrodes on both sides thereof.

It has previously been submitted that claim 1 describes avalanche voltage applied during application of a stimulating light, such as during read out of an image signal using the photoconductive layer. The Examiner continues to rely on Takahashi for teaching this feature.

Applicant submits that in Takahashi, the avalanche voltage is applied upon x-ray stimulation, such as during recording. To the extent charges are stored in a photoconductor (e.g. photoconductor-insulator interface) during x-ray exposure, there is no application of an avalanche upon application of a stimulating readout light. Takahashi specifically contemplates the x-ray exposure as discrete from the stimulating light exposure. See Fig. 1, and see also Col. 5, lines 48-69. The Examiner cannot rely on the avalanche effect applied during the x-ray exposure to teach the feature of avalanche during stimulating light exposure.

Relatedly, the Examiner contends that it would be obvious to provide the avalanche voltage during pixelated read out in order to increase the optical detection sensitivity. It is noted that the increase in the optical detection efficiency in Takahashi results from the application of the field according to a different stimulating event than that claimed. Further, during read out in Takahashi, the read out comprises the migration of charge stored at an interface between a photoconductor and insulator with an applied low voltage of 150 V, for example. Col. 5, lines 62-63. No avalanche results from such a voltage level.

The Examiner also cites an apparent use of a stimulable phosphor in place of the phosphorescent material as a storage material. However, this would not negate the fact that Takahashi teaches avalanche according to a different stimulating event. The issue is not bodily incorporation of the teachings of the reference as the Examiner contends, but a difference in structural effect (electron migrations) based on avalanche voltage. The Examiner has not rebutted this point in any clear manner.

Moreover, the Examiner contends that it would have been obvious for those skilled in the art to apply an electric field which causes avalanche amplification to the apparatus of Karella. However, it is impossible to apply the electric field which causes avalanche amplification to the apparatus of Karella during readout. The detector of Karella includes an element such as TFT, and should the electric field which causes avalanche amplification be applied to the detector of Karella, the detector would be destroyed. The detector of Perez-Mendez is similar to that of Karella. Therefore, it is obvious that the electric field which causes avalanche amplification cannot be applied to the detector of Karella or that of Perez Mendez.

Further, Takahashi fails to teach or suggest application of the electric field which causes avalanche amplification to the detector including an element such as TFT.

In Takahashi, first, the photoconductive layer is illuminated with light while a voltage of 150V is applied to the photoconductive layer, and electric charges are uniformly accumulated at the interface between the photoconductive layer and the insulating layer. Then, the photoconductive layer is irradiated with X-rays while a voltage of 240V is applied to the photoconductive layer, and electric charges are generated in the photoconductive layer. Accordingly, a part of the accumulated electric charges is cancelled by the electric charges generated by irradiation of the X-rays. Then, the photoconductive layer is scanned with a HeNe laser-while 4 voltage of 150V is applied to the photoconductive layer again, and electric charges are generated again in the area of the photoconductive layer, which was irradiated with the X-rays. Then, the generated electric charges are stored, and an inflowing current produced by the electric charges is detected.

Here, in the detector of Takahashi, the electric charges are stored on the insulating layer. Therefore, in Takahashi, even if a voltage which causes avalanche amplification should be applied to the photoconductive layer during readout, namely scanning by the HeNe laser, the amount of electric charges stored on the insulating layer would not change, and no advantageous effects would be obtained.

Further, the voltage which causes the avalanche amplification is different from the voltage applied during radiation of the X-rays. Therefore, if the voltage which causes the avalanche amplification is applied during readout, the electric charges would also be stored in an area of the photoconductive layer, which was not irradiated with the X-rays, and an inflowing

current produced by the electric charges stored in the area would also be detected. Consequently, an image signal which includes noise would be detected. Further, the relationship between the irradiation dose and the detected electric charges becomes non-linear, and that is disadvantageous to the performance of the detector.

Further, application of the voltage which causes avalanche amplification may immediately cause avalanche amplification. However, since the electric charges are stored on the insulating layer in the detector of Takahashi, the intensity of the electric field between the electrodes changes as the amount of the electric charges stored on the insulating layer changes. Therefore, no advantageous effects would be obtained from the application of the voltage that causes avalanche amplification.

Hence, Takahashi fails to teach or suggest application of the electric field which causes avalanche amplification during readout.

For the foregoing reasons, independent claim 1 is patentable. Claims 5 and 62 are patentable for analogous reasons. The remaining claims are patentable based on their dependency.

With further regard to claim 3, this claim describes a thickness which is conceded not to be taught in the art. The narrower 2 micrometer thickness in Takahashi does not make obvious the claimed dimensions. Though the Examiner indicates that voltage characteristics need not vary with photoconductive layer thickness, this does not give free license on the range of the thickness of the material. For example, Takahashi suggests that arbitrary increases in thickness of the photoconductive film leads to unstable energy propagation. Col. 2, lines 25-29.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)  
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Therefore, claim 3 is patentable for at least this reason. The thickness claimed and that disclosed is not "close enough" to warrant a rejection in this circumstance.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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